REMARKS

Claims 1 and 3-43 are pending in the application. Claim 2 has been canceled, and claims 4-20 and 22-34 have been withdrawn from consideration by the Examiner. Claims 42 and 43 are newly added. Claims 1, 3, 21 and 35-41 stand rejected. Favorable reconsideration is respectfully requested.

Withdrawal of the finality of the above-identified Office Action is respectfully requested. The finality is believed to be improper under MPEP 706.07(b). Specifically, Kellner et al. and Schramm et al. are not "art of record" as required, but instead are newly applied. Additionally, new grounds of rejection have been asserted, including the Examiner's argument that "the force provided by motor 4 is part of the assisting force, not the primary force (it is part of the assisting force and can supply a positive force as well as a counter force" (paragraph 9 of the pending action).

Claims 1, 3, 21, 35, 39 and 41 were rejected under 35 USC 112, first paragraph, as not being enabled by the specification. More specifically, the Office Action alleges that the Applicants have stated that the primary brake force is not necessarily the same as the brake operating force, and that the Examiner cannot find support for this in the elected embodiment or specification.

As an initial matter, it is noted that claim 35 does not recite a "primary drive force", and therefore the Examiner's remarks in support of the asserted § 112 rejection do not apply to claims 35 and 39. Withdrawal of the rejection with respect to claims 35 and 39 is therefore respectfully requested.

Further, claim 1 does not state that the primary brake force is not necessarily equal to a value corresponding to the brake operating force, and the Applicants have not argued this concerning the present invention. Rather, the Applicants have argued that the primary drive force is not necessarily the value corresponding to the brake operating force in the arrangement of Lohberg. For example, it was pointed out in the submission filed with the Request for Continued Examination on December 2, 2002, in the penultimate paragraph on page 3, that "[i]n the arrangement of Lohberg ... the primary drive force is not necessarily equal to a value corresponding to the brake operating force, that is, is different from this value upon reduction of the brake cylinder pressure in Lohberg." In making this argument, it was deemed helpful to delineate the

logical or semantic distinction between a brake operating force (a force applied by an agent to an operating member) and a corresponding or resulting primary drive force.

In view of the above, and in particular for at least the reason that the elements alleged to lack support under § 112, first paragraph are not claimed, withdrawal of the asserted rejection of claims 1, 3, 21 and 41 under § 112, first paragraph is respectfully requested.

Claims 1, 35-37, 39 and 41 were rejected as being anticipated by Lohberg. However, Lohberg fails to support the asserted rejection for at least the reason that Lohberg does not disclose an assisting device applying an assisting drive force to a pressurizing piston in a first direction in which a primary drive force is applied to the pressurizing piston, without application of a force to a brake operating member in a direction opposite to a second direction in which the brake operating force acts on the brake operating member, as required by claim 1 as amended.

To re-state the above in other terms for better understanding: the assisting drive force and the primary drive force act on a pressurizing piston in a first direction, and the brake operating force acts on a brake operating member in a second direction. Where the brake operating member is operated by a pivotal movement thereof about an axis in the clockwise direction, for example, the above-indicated "direction opposite to the second direction" is in the counterclockwise direction. The assisting device as recited in claim 1 is operable without generating a force in this opposite direction.

In Lohberg, by contrast, the elements alleged to correspond to the claimed assisting device, i.e., "control elements" 3 and 4, are not operable without generating a force in this opposite direction. Clearly, the drive force generated by element 4 (alleged in the Office Action to correspond to the claimed assisting device) in Lohberg is applied to the brake operating member in the direction opposite to the second direction recited in amended claim 1. Further, element 3 (also alleged to correspond to the claimed assisting device) disclosed in Lohberg is clearly not operable to apply an assisting drive force to the piston of the master cylinder 6, without application of a force to the brake operating member 2 in a direction opposite to the direction (i.e., the second direction recited in claim 1) in which the brake operating force acts on the brake operating member. This can be seen by observing that the force generated by element 3 acts on

the brake operating member in the recited direction opposite to the second direction, through the levers 5, 6, since both a force based on the brake operating force and the force generated by element 3 act on the lever 6 in the same direction. Put another way, because the force applied by element 3 in Lohberg is applied at one end of a lever 6, there will always be a counteracting force at the other end of the lever 6 where the force from the brake operating pedal 2 is being applied, due to a torque about the midpoint of lever 6 where it attaches to push rod 26. By contrast, inspection of Fig. 15 of the present application, in particular elements 81, 224, and 225) shows that there is no such counteracting force associated with the assisting device. Accordingly, since Lohberg fails to teach an assisting device as recited in claim 1, withdrawal of the rejection of claim 1, and of claims 36, 37 and 41 dependent thereon is respectfully requested.

Lohberg also fails to anticipate the invention as recited in claim 35 and claim 39 dependent thereon. More specifically, Lohberg is totally silent at least as to "a master cylinder characteristic control device for controlling an amount of the fluid in said pressurizing chamber of said master cylinder, on the basis of said brake operating condition quantity, to thereby control a relationship between a position of said pressurizing piston relative to said cylinder housing and the fluid pressure in said pressurizing chamber, for controlling a fluid pressurizing characteristic of said master cylinder" as recited in the last paragraph of claim 35. While Lohberg mentions controlling a relationship between "foot pressure" and "pedal travel", and a relationship between "braking force" and "pedal travel", there is no discussion of controlling the amount of fluid in the pressurizing chamber of the master cylinder 7 of Lohberg on the basis of the brake operating quantity, to control the relationship between the position of the pressurizing piston and the pressure in the pressurizing chamber of the master cylinder 7. The Examiner is respectfully reminded that an anticipation rejection requires that each and every claimed element be identically disclosed in a single reference. Accordingly, the Applicant respectfully reiterates his request that the Examiner explain in detail how Lohberg meets this requirement with respect to claim 35, or alternatively, that the Examiner withdraw the rejection of claims 35 and 39 as anticipated by Lohberg.

Claims 1, 3, 35-37, 39 and 41 were further rejected under 35 USC 102(b) as being anticipated by Kellner et al. (Kellner) (US 5,531,509). However, Kellner does not support

the asserted rejection for at least the reason that Kellner does not disclose an assisting device including changing means as required by the rejected claims. In fact, as will be made clear in the following discussion, Kellner is one example of prior art, as discussed in the introductory portion of the present application, whose deficiencies are remedied by embodiments of the present invention.

The Office Action refers to several elements of the braking system disclosed in Kellner, but does not identify a corresponding element in Kellner for each element recited in claim 1. In particular, for example, no specific parts of Kellner are identified as corresponding to the elements of the assisting device as recited in claim 1, although it is noted that the Office Action does refer to the booster 1 of Kellner as an "assisting device". However, as the following discussion will make clear, the booster 1 of Kellner cannot be considered to be an "assisting device" as required by claim 1. This is apparent for at least the reason that the booster 1 does not act to generate an assisting drive force in addition to a primary drive force based on a brake operating force as in claim 1, but instead, when in operation, is the sole drive force acting on a pressurizing piston. Moreover, the drive force applied by the booster 1 is simply proportional to the brake operating force. That is, Kellner does not disclose changing means capable of changing a relationship between the foregoing applied drive force and the brake operating condition quantity (brake operating force).

A braking system disclosed in Kellner incorporates booster 1 (col. 2, line 12) having booster pressure chamber 15 whose pressure is controlled by control unit 36 via throttle valve 17 (col. 5, lines 31-34), arranged to apply a drive force to pressurizing piston 20 in the direction of application of a brake operating force. However, the braking system of Kellner is not arranged to apply to the pressurizing piston 20 an assisting drive force in addition to a primary drive force based on the brake operating force acting on the brake pedal 2, as described below in more detail. In other words, the drive force based on the pressure in the booster pressure chamber 15 cannot be interpreted to be an assisting drive force within the meaning of claim 1. The following paragraph explains the foregoing.

In the embodiment of Fig. 1 of Kellner, the fluid pressure in the booster pressure chamber 15 held in communication with pump 19a of a hydraulic power source 19 can

be controlled by controlling the solenoid 47 of the throttle valve 17. While the pressure source 19 is in operation, solenoid valves 8 and 12 are placed in open and closed positions, respectively (col. 4, lines 48-51), so that piston 9 is not displaceable while pedal piston 3 is displaceable relative to the fixed piston 9 (col. 4, lines 55-59) when brake pedal 2 is operated, whereby a fluid pressure is generated in annular chamber 10 (col. 5, lines 4-18). Thus, under conditions when the booster pressure is active, the booster pressure is the sole drive force applied to the pressurizing piston 20 of the master cylinder. Therefore, the drive force applied to the pressurizing piston 20 based on the fluid pressure in the booster pressure chamber 15 cannot be interpreted to be an assisting drive force supplementing a primary drive force based on the operating force of the brake pedal 2 to the pressurizing piston 20 of the master cylinder. Accordingly, Kellner fails to teach an assisting device as recited in claim 1.

Additionally, the drive force applied to the piston 20 based on the pressure in the booster pressure chamber 15 in the braking system of Kellner is simply proportional to the brake operating force; that is, no changing means capable of changing a relationship between the foregoing applied drive force and the brake operating condition quantity (brake operating force) are shown. The following discussion makes this clear.

The fluid pressure in the booster pressure chamber 15 is detected by the pressure sensor 33, while the fluid pressure in the annular chamber 10 is detected by the pressure sensor 34 (col. 5, lines 18-20). Kellner considers the fluid pressure in the chamber 10 (detected by the pressure sensor 34) to represent a desired value (col. 5, lines 24-26) set by the brake pedal 2 (col. 5, lines 51-52 and col. 6, lines 41-42), and consider the fluid pressure in the chamber 15 (detected by the pressure sensor 33) to represent an actual value of the pressure acting on the pressurizing piston 20 (col. 5, lines 26-30 and lines 52-53). Kellner further states that control unit 36 controls the solenoid 47 on the basis of a difference between the above-indicated desired and actual values (col. 5, lines 23-26 and lines 31-33), so that the difference is reduced (col. 5, lines 51-57), that is, so that the actual value coincides with the desired value. Therefore, the electric current to be applied to the solenoid 47 is controlled according to a control amount determined by the desired value detected by the pressure sensor 34 and representative of the brake operating condition quantity (operating state of the

brake pedal 2), such that the actual value detected by the pressure sensor 33 coincides with the desired value detected by the pressure sensor 34.

In the second embodiment of Fig. 4 of Kellner, pressure sensor 34a is used in place of the pressure sensor 34, and travel sensor 64 is provided to detect the travel of the brake pedal 2 (col. 8, lines 42-50). Kellner clearly states that these two sensors 34a, 64 are provided to "detect with sufficient reliability a driver's desire to brake" (col. 8, lines 50-53). Further, pressure sensors 92, 93 are provided in place of the pressure sensor 33 (col. 8, lines 58-59) to detect the "actual value". The braking system of Fig. 4 is arranged to control throttle valve 63 (col. 8, line 5) such that the actual value detected by the pressure sensors 92, 93 coincides with the desired value detected by the sensors 34a, 64).

Thus, the drive force provided by the booster 1 of Kellner is simply proportional to the brake operating condition quantity, and there is no capability of changing a relationship between the booster drive force and the brake operating condition quantity (brake operating force), as required by claim 1. Therefore, Kellner fails to show an assisting device including changing means as recited in claim 1. Certainly, the reference also fails to show or teach changing means including pressure-reducing means as recited in the last paragraph of claim 1.

In view of the above, Kellner does not support the asserted rejection for anticipation of claim 1, and claims 3, 36, 37 and 41 dependent thereon. Withdrawal of this rejection is therefore respectfully requested.

Claim 35, as noted above, was also rejected as being anticipated by Kellner. However, Kellner also fails to support the asserted rejection with respect to claim 35. Among other elements recited in claim 35, Kellner does not show "a master cylinder characteristic control device for controlling an amount of the fluid in said pressurizing chamber of said master cylinder, on the said brake operating condition quantity, to thereby control a relationship between a position of said pressurizing piston relative to said cylinder housing and the fluid pressure in said pressurizing chamber, for controlling a fluid pressurizing characteristic of said master cylinder". As described above with respect to claim 1, the braking system of Kellner et al. is merely arranged to provide a drive force applied to the pressurizing piston 20 such that the drive force is proportional

to the brake operating condition quantity. In view of this, the Examiner is respectfully requested to explain to the applicant how the relationship between the piston 20 and the fluid pressure in the master cylinder of Kellner et al. can be controlled as recited in claim 35. Alternatively, withdrawal of the rejection of claim 35, and of claim 39 dependent thereon, is respectfully requested.

Claims 38 and 40 were rejected under 35 USC 103(a) as being unpatentable over Kellner in view of Schramm et al. (Schramm) (U.S. 5,954,407). To support a rejection under § 103, a cited combination of references must teach or suggest all claimed elements. Claim 38 depends on claim 1 and therefore incorporates its limitations. Similarly, claim 40 incorporates the features of claim 35. As demonstrated in the above discussion, Kellner does not teach or suggest the limitations of claims 1 and 35, and clearly Schramm does not remedy the deficiencies in Kellner with respect to claims 1 and 35. Therefore, claims 38 and 40 are allowable over the combination of Kellner and Schramm, and withdrawal of the asserted rejection is respectfully requested.

As noted earlier, new claims 42 and 43 have been submitted herewith. It is observed that the prior art discussed above also clearly does not anticipate or render obvious new claims 42 and 43. For example, Lohberg does not disclose at least an assisting device which includes only one actuator operable to generate the assisting drive force, or an assisting device which does not include an actuator operable to generate a force to be applied to the brake operating member in a direction opposite to the direction of application of the brake operating force to the brake operating member, as recited in new claims 42 and 43 respectively. Additionally, Kellner does not disclose, for example, at least an assisting device including changing means as recited in new claims 42 and 43, as demonstrated in the above discussion.

In light of the above discussion, Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance.

The Examiner is invited to contact the undersigned at (202) 220-4323 to discuss any matter concerning this application. The Office is authorized to charge any fees

under 37 C.F.R. 1.16 or 1.17 related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

Dated: MARCH 12, 2003

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VERSION OF AMENDED CLAIMS MARKED UP TO SHOW CHANGES

Please amend the claims as follows:

1. (Four Times Amended) A hydraulically operated braking system comprising:

a brake operating member operable by an operator;

a master cylinder including a pressurizing piston operatively connected to said brake operating member and partially defining a pressurizing chamber, said pressurizing piston being moved by said brake operating member to pressurize a fluid in said pressurizing chamber;

a brake cylinder actuated by the pressurized fluid received from said master cylinder;

a sensing device for detecting a brake operating condition quantity indicative of an operating condition of said brake operating member; and

an assisting device for applying to said pressurizing piston an assisting drive force which is different than a primary drive force to be applied to said pressurizing piston on the basis of a brake operating force acting on said brake operating member, said assisting device applying said assisting drive force to said pressurizing piston in a first direction in which said primary drive force is applied to said pressurizing piston, without application of a force to said brake operating member in a direction opposite to a second direction in which said brake operating force acts on said brake operating member,

and wherein said assisting device comprises an assisting drive force control device electrically operable to control said assisting drive force on the basis of said brake operating condition quantity detected by said sensing device,

said assisting drive force control device including changing means for changing a relationship between said assisting drive force and said brake operating condition quantity, said relationship being in a normal operation of the braking system with an operation of said brake operating member,

said changing means including pressure-reducing means for reducing a pressure of the fluid in said brake cylinder for a given value of said brake operating force, by reducing said assisting drive force to be applied to said pressurizing piston in said first

direction[, and without reducing said primary drive force applied to said pressurizing piston on the basis of said brake operating force].